SECTION 905(b) (WRDA 86) ANALYSIS
Estudillo Canal, San Leandro, California
(CWIS #081470; P2 Project # 104578)

1. STUDY AUTHORITY

a. This Section 905(b) Analysis was prepared as an initial response to Section 410 of the Water Resources Development Act of 2000 (Public Law 106-541), which reads as follows:

"Section 410. ESTUDILLO CANAL, SAN LEANDRO, CALIFORNIA. The Secretary shall conduct a study to determine the feasibility of carrying out a project for flood damage reduction along the Estudillo Canal, San Leandro, California."

b. Funds in the amount of $100,000 were appropriated in Fiscal Year 2003 to conduct the reconnaissance phase of the study. Due to six-month delay in the FY 2003 Federal budget and late receipt of funds, the study could not be initiated until the 4th quarter of FY 2003.

2. STUDY PURPOSE

The purpose of the reconnaissance phase study is to determine if there is a Federal interest in participating in a cost shared feasibility phase study, which will determine if there is a Federal interest in providing flood damage reduction improvements to Estudillo Canal, in San Leandro, California. In response to the study authority, the reconnaissance study was initiated on August 27, 2003. The reconnaissance study has resulted in the finding that there is a Federal interest in continuing the study into the feasibility phase. The purpose of this Section 905(b) Analysis is to document the basis for this finding and establish the scope of the feasibility phase. As the document that establishes the scope of the feasibility study, the Section 905(b) Analysis is used as the chapter of the Project Management Plan that presents the reconnaissance overview and formulation rationale.

3. LOCATION OF STUDY, NON-FEDERAL SPONSOR AND CONGRESSIONAL DISTRICTS

a. The study area is located within the city limits of San Leandro, in Alameda County, California, about 15 miles southeast of San Francisco. The watershed drains into the San Francisco Bay, with a drainage area of about 10 square miles (see Attachment 1).

b. The non-Federal sponsor for the feasibility phase of the study is the Alameda County Flood Control and Water Conservation District.

c. The study area lies within the jurisdiction of the 13th Congressional District.

4. PRIOR REPORTS AND EXISTING PROJECTS

a. The following report was reviewed as a part of this study:

(1) Alameda County Flood Control and Water Conservation District, *Engineering Evaluation Report for Zone 2, Line A, Estudillo Canal, San Leandro, California*, October 2000. This brief report describes the FEMA 100-year floodplain, proposes improvements to eliminate the 100-year floodplain, and describes in general terms the benefits that would result from eliminating the floodplain. The report appendices include preliminary hydraulic study data.

(2) This study is investigating potential modifications of the following project: Zone 2, Line A (Estudillo Canal) Flood Control Project: Estudillo Canal is a flood control facility consisting of a combination of earth channels, concrete channels, and street culvert crossings that starts at San Francisco Bay and extends eastward across the Nimitz Freeway to East 14th Street in San Leandro, California. The Zone 2, Line A flood control facility was designed in 1956 by the Alameda County Flood Control and Water Conservation District prior to the establishment of the FEMA National Flood Insurance Program (NFIP), and was designed to contain a 15-year design storm. Under current NFIP requirements, the existing flood control facility is inadequate and unable to contain the FEMA 100-year design storm.

5. PLAN FORMULATION

During a study, six planning steps that are set forth in the Water Resource Council's Principles and Guidelines are repeated to focus the planning effort and eventually to select and recommend a plan for authorization. The six planning steps are: 1) specific problems and opportunities; 2) inventory and forecast conditions; 3) formulate alternative plans; 4) evaluate effects of alternative plans; 5) compare alternative plans; and 6) select recommended plan. The iterations of the planning steps typically differ in the emphasis that is placed on each of the steps. In the early iterations, those conducted during the reconnaissance phase, the step of specifying problems and opportunities is emphasized. That is not to say, however, that the other steps are ignored since the initial screening of preliminary plans that results from the other steps is very important to the scoping of the follow-on feasibility phase studies. The sub-paragraphs that follow present the results of the initial iterations of the planning steps that were conducted during the reconnaissance phase. This information will be refined in

future iterations of the planning steps that will be accomplished during the feasibility phase.

a. National Objectives

(1) The National or Federal objective of water and related land resources planning is to contribute to national economic development consistent with protecting the nation's environment, pursuant to national environmental statures, applicable executive orders, and other Federal planning requirements. Contributions to National Economic Development (NED) are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct net benefits that accrue in the planning area and the rest of the nation.

(2) The Corps has added a second national objective for Ecosystem Restoration in response to legislation and administration policy. This objective is to contribute to the nation's ecosystems through ecosystem restoration, with contributions measured by changes in the amounts and values of habitat.

b. Public Concerns: A number of public concerns have been identified during the course of the reconnaissance study. Initial concerns were expressed in the study authorization. Additional input was received through coordination with the Alameda County Flood Control and Water Conservation District, and some initial coordination with other agencies. The public concerns that are related to the establishment of planning objectives and planning constraints are:

(1) Flooding due to insufficient flow capacity, sediment accumulation (downstream of concrete-lined channel);

(2) Constrained right-of-way. Urban development has constrained options to either floodwalls or a bypass in the study area.

c. Problems and Opportunities: The evaluation of public concerns often reflects a range of needs, which are perceived by the public. This section describes these needs in the context of problems and opportunities that can be addressed through water and related land resource management. For each problem and opportunity, the existing conditions and the expected future conditions are described, as follows:

(1) The current flood control facility was designed to contain a 15-year design storm. Without-project average annual damages are estimated to be approximately $2.2 million. With-project average annual benefits are estimated to be approximately $2.1 million, $1.8 million, and $.9 million for alternatives with designs capable of containing the 100-year, 50-year, and 25-year flow events, respectively.

(2) At this time there does not appear to be an opportunity to conduct ecosystem restoration as part of the project. However, the feasibility of improving habitat and providing ecosystem restoration will be evaluated in further detail during the feasibility study phase.

c. Planning Objectives. The national objectives of National Economic Development and National Ecosystem Restoration are general statements and not specific enough for direct use in plan formulation. The water and related land resource problems and opportunities identified in this study are stated as specific planning objectives to provide focus for the formulation of alternatives. These planning objectives reflect the problems and opportunities and represent desired positive changes in the without-project conditions. The planning objectives for the Estudillo Canal flood damage reduction project are to reduce flood damages to residential and associated urban development in the study area, and to conduct environmental restoration where feasible.

d. Planning Constraints. Unlike planning objectives that present desired positive changes, planning constraints represent restrictions that should not be violated. The planning constraints identified in this study area as follows: The physically constrained right-of-way limits potential alternatives.

e. Preliminary Measures.

(1) No Action. The Corps is required to consider the option of "No Action" as one of the alternatives in order to comply with the requirements of the National Environmental Policy Act (NEPA). No Action assumes that no project would be implemented by the Federal Government or by local interests to achieve the planning objectives. No Action, which is synonymous with the Without Project Condition, forms the basis from which all other alternative plans are measured.

(2) Non-Structural: The removal of sediments and vegetation in the canal has been identified as non-structural measures, however, this measure alone would not provide the needed additional storage in the existing canal. Relocation of structures within the floodplain is another non-structural alternative; however, it is considered to be too expensive and therefore not a viable alternative.

(3) Structural: Redesign of the trapezoidal canal to a rectangular canal, or the construction of a bypass canal have been identified as possible structural alternatives to the identified problem. The bypass canal may not be a feasible alternative due to the heavily urbanized area and the resulting expensive construction costs.

(4) Separable Features: None have been identified at this time.

(5) Additional Measures for Complete Alternatives: None have been identified at this time.

f. Preliminary Plans: Preliminary plans are comprised of one or more management measures that survived the initial screening. The descriptions and results of the evaluations of the preliminary plans that were considered in this study are presented below:

(1) Preliminary Plans Eliminated From Further Consideration: Non-structural alternatives were eliminated from further consideration as they would not solve the flooding problems in the study area.

(2) Preliminary Plans for Further Consideration: The construction of a rectangular channel in lieu of the existing trapezoidal canal has been identified as warranting further analysis.

g. Conclusions from the Preliminary Screening: The preliminary screening indicates that alternatives that provide maximum flood damage reduction, i.e., raising the sides of the trapezoidal canal, or construction of a bypass canal have the greatest potential for implementation. The potential magnitude and types of benefits from the proposed actions are estimated to be approximately $2.1 million, $1.8 million, and $.9 million for alternatives with designs capable of containing the 100-year, 50-year, and 25-year flow events, respectively. A project could potentially protect approximately 1,800 residential properties in the study area. There are approximately 1,530 structures in the .02 probability event flood plain and approximately 900 structures in the .04 probability event flood plain. Based on this information, the preliminary alternative which address the planning objectives appear viable. The estimated cost for the construction of the rectangular channel is $25 million.

h. Establishment of a Plan Formulation Rationale: The conclusions from the preliminary screening form the basis for the next iteration of the planning steps that will be conducted in the feasibility phase. The likely array of alternatives that will be considered in the next iteration include 1) constructing a rectangular channel in lieu of the existing trapezoidal canal, or 2) constructing a bypass canal.

6. FEDERAL INTEREST

Since flood damage reduction is an output with a high budget priority and that flood damage reduction is the primary output of the alternatives to be evaluated in the feasibility phase, there is a Federal interest in conducting the feasibility study. There is also a Federal interest in other related outputs of the alternatives including possible environmental restoration that could be developed within existing policy. Based on the preliminary screening of alternatives, there appears to be potential project alternatives that would be consistent with Army policies, costs, benefits, and environmental impacts. The average annual benefits are estimates to be $1,500,000, with a benefit-to-cost ratio of 1.4 to 1.

7. PRELIMINARY FINANCIAL ANALYSIS

As the local sponsor, the Alameda County Flood Control and Water Conservation District will be required to provide 50 percent of the cost of the feasibility phase. The local sponsor is also aware of the cost sharing requirements for potential project implementation. A Letter of Intent from the local sponsor stating a willingness to pursue the feasibility study and to share in its cost, and an understanding of the cost sharing that is required for project construction is included as Attachment 2.

8. ASSUMPTIONS AND EXCEPTIONS

a. Feasibility Phase Assumptions: The following critical assumptions will provide a basis for the feasibility study:

(1) Without Project Condition Assumption: Without any improvements there would continue to be damages to existing homes and structures within the study area during a storm event greater than the 15-year event.

(2) There may be an opportunity to provide environmental restoration within the study area, which would need to be further evaluated during the feasibility study phase.

b. Policy Exceptions and Streamlining Initiatives: The study will be conducted in accordance with the Principles and Guidelines and the Corps of Engineers regulations. No exceptions to established guidance have been identified at this time that will streamline the feasibility study process that will not adversely impact the quality of the feasibility study. Approval of the Section 905(b) Analysis by CESPD does not result in the approval of any policy exceptions or streamlining initiatives.

c. Other Approvals Required: None have been identified at this time.

9. **FEASIBILITY PHASE MILESTONES**

Milestone	Description	Duration (mo)	Cumulative (mo)
Milestone F1	Initiate Study	0	0
Milestone F2	Public Workshop/Scoping	2	2
Milestone F3	Feasibility Scoping Mtg	11	13
Milestone F4	Alternative Review Conf	9	22
Milestone F4A	Alternative Formulation Briefing	5	27
Milestone F5	Draft Feasibility Report	3	30
Milestone F6	Final Public Meeting	1	31
Milestone F7	Feasibility Review Conf	1	32
Milestone F8	Final Report to SPD	3	35
Milestone F9	DE's Public Notice	1	36
-	Chief's Report	4	40
-	Project Authorization	4	44

10. **FEASIBILITY PHASE COST ESTIMATE**

WBS#	Description	Cost
JAA00	Feas-Surveys & Mapping except Real Estate	$ 150,000
JAB00	Feas-Hydrology & Hydraulics Studies/Report	700,000
JAC00	Feas-Geotechnical Studies/Report	750,000
JAE00	Feas-Engineering & Design Analysis Report	100,000
JB000	Feas-Socioeconomic Studies	55,000
JC000	Feas-Real Estate Analysis/Report	60,000
JD000	Feas-Environmental Studies/Report (except USF&WS)	250,000
JE000	Feas-Fish & Wildlife Coordination Act Report	80,000
JF000	Feas-HTRW Studies/Report	65,000
JG000	Feas-Cultural Resources Studies/Report	31,000
JH000	Feas-Cost Estimates	60,000
JI000	Feas-Public Involvement Documents	10,000
JJ000	Feas-Plan Formulation & Evaluation	160,000
JL000	Feas-Final Report Documentation	50,000
JLD00	Feas-Technical Review Documents	50,000
LM000	Feas-Washington Level Report Approval (Review Support)	50,000
JPA00	Project Management & Budget Documents	200,000
JPB00	Supervision & Administration	30,000
JPC00	Contingencies	150,000
L0000	Project Management Plan (PMP)	50,000
Q0000	PED Cost Sharing Agreement	20,000
Total		**$3,071,000**

11. VIEWS OF OTHER RESOURCE AGENCIES

Because of the funding and time constraints of the reconnaissance phase, only limited and informal coordination has been conducted with other resource agencies. Views that have been expressed are as follows:

a. The U.S. Fish and Wildlife Service supports the proposed study of the flooding problem in the Estudillo Canal area in San Leandro.

b. The California Department of Fish and Game also supports the proposed study of the flooding problem in the Estudillo Canal area.

12. POTENTIAL ISSUES AFFECTING INITIATION OF FEASIBILITY PHASE

a. Continuation of this study into the cost-shared feasibility phase is contingent upon an executed FCSA. Failure to achieve an executed Feasibility Cost Sharing Agreement (FCSA) within 18 months of the approval date of the Section 905(b) Analysis will result in termination of the study. There are no issues that could impact the initiation of the feasibility phase.

b. The schedule for signing the FCSA is November 2004. Based on the schedule of milestones in Paragraph 9, completion of the feasibility report would be in September 2008, with a potential Congressional Authorization in a WRDA 2010.

13. PROJECT AREA MAP

A map of the study area is provided as Attachment 1.

14. RECOMMENDATIONS

I recommend that the Estudillo Canal study proceed into the feasibility phase.

Date 21 July 04

Michael McCormick
LTC, EN
Commanding

Attachments
1. Map of Study Area
2. Letter of Intent

COUNTY OF ALAMEDA
PUBLIC WORKS AGENCY
399 Elmhurst Street • Hayward, CA 94544-1395
(510) 670-5480

June 7, 2004

Lieutenant Colonel Michael McCormick
District Engineer, San Francisco District
US Army Corps of Engineers
333 Market Street
San Francisco, CA 94105-2197

Dear Lieutenant Colonel McCormick:

RE: Letter of Intent – Estudillo Canal Feasibility Study, Alameda County

The Alameda County Flood Control and Water Conservation District (ACFCWCD) is interested in obtaining U.S. Army Corps of Engineers (Corps) assistance in carrying out the Feasibility Phase of the Estudillo Canal Study.

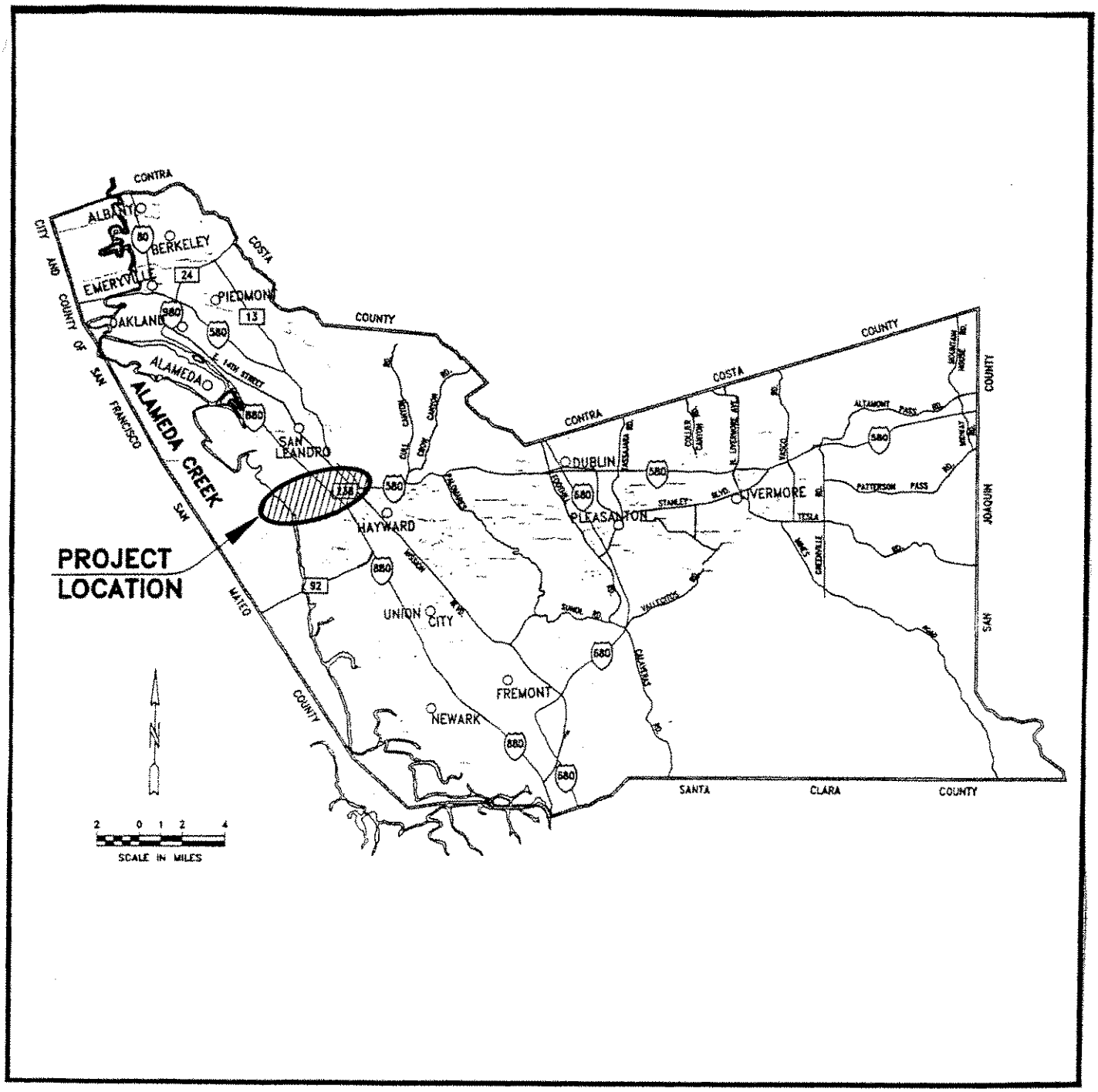
We are fully aware of and understand that ACFCWCD is expected to assume cost-sharing responsibilities associated with the Estudillo Canal Feasibility Study undertaken with the Corps. Such cost would be outlined in a Project Management Plan yet to be developed by the Corps. We have reviewed and commented on the Corps' draft Section 905b Analysis and believe it describes the issues and study activities that will contribute to protecting the Estudillo Canal Watershed.

We understand that this letter is a necessary component of the process leading to negotiations between ACFCWCD and the Corps regarding cost-sharing arrangements for the Feasibility Study. We further understand that this letter merely constitutes an expression of intent and not a contractual obligation.

Truly yours,

Donald J. LaBelle
Director of Public Works

c: David Patterson, US Army Corps of Engineers
Hank Ackerman, Flood Program Manager, ACFCWCD



STUDY AREA MAP
ESTUDILLO CANAL
SAN LEANDRO, ALAMEDA COUNTY, CALIFORNIA

ATTACHMENT 2

QUALITY CONTROL CERTIFICATION

COMPLETION OF QUALITY CONTROL ACTIVITIES

The District has completed the Section 905(b) (WRDA 1986) Analysis for Estudillo Canal, San Leandro, California. Certification is hereby given that all quality control activities defined in the CEPSN Quality Management Plan, 17 December 2003, appropriate to the level of risk and complexity inherent in the product has been completed. Documentation of the quality control process is enclosed.

GENERAL FINDINGS

Compliance with clearly established policy principles and procedures, utilizing clearly justified and valid assumptions, has been verified. This includes assumptions; methods, procedures and materials used in analyses; alternatives evaluated; the appropriateness of data used and level of data obtained; and the reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy. The undersigned recommends certification of the quality control process for this product.

Cindy Tejeda, CESPN-ET-PF
Independent Technical Reviewer

5/17/04
Date

QUALITY CONTROL CERTIFICATION

As noted above, all issues and concerns resulting from technical review of the product have been resolved. The project may proceed to the feasibility phase under Section 205 of the Continuing Authorities Program, as recommended in the Section 905(b)(WRDA 1986) Analysis.

Thomas R. Kendall, CESPN-ET-P
Chief, Planning Branch

6/17/04
Date